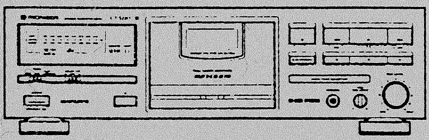
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2673

STEREO CASSETTE DECK

CT-S220

CT-S220 HAS THE FOLLOWING:

Type	Power Requirement	Remarks
HEM	AC220–230V, 230–240V (Switchable) *	
HB	AC220–230V, 230–240V (Switchable) *	
HPW	AC220–230V, 230–240V (Switchable) *	
SD	AC110V, 120 – 127V, 220V, 240V (Switchable)	

* Change the connection of the power transformer's primary wiring.

- **This manual is applicable to CT-S220/HEM, HB, HPW and SD.**
- **For HB, HPW and SD types, refer to page 22.**

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1. EXPLODED VIEWS, PACKING AND PARTS LIST

1.1 EXTERIOR AND PACKING

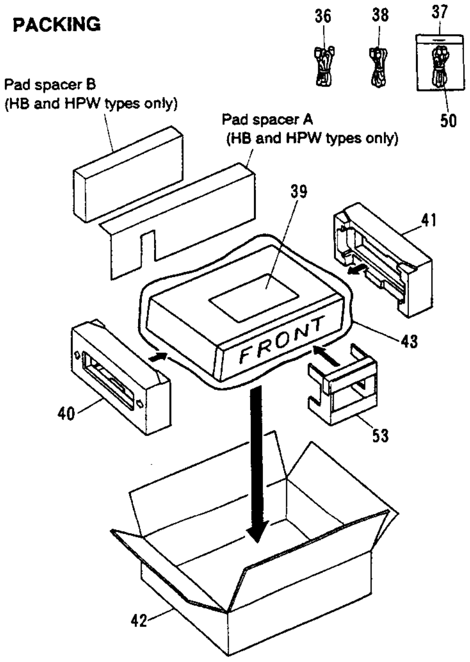
NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

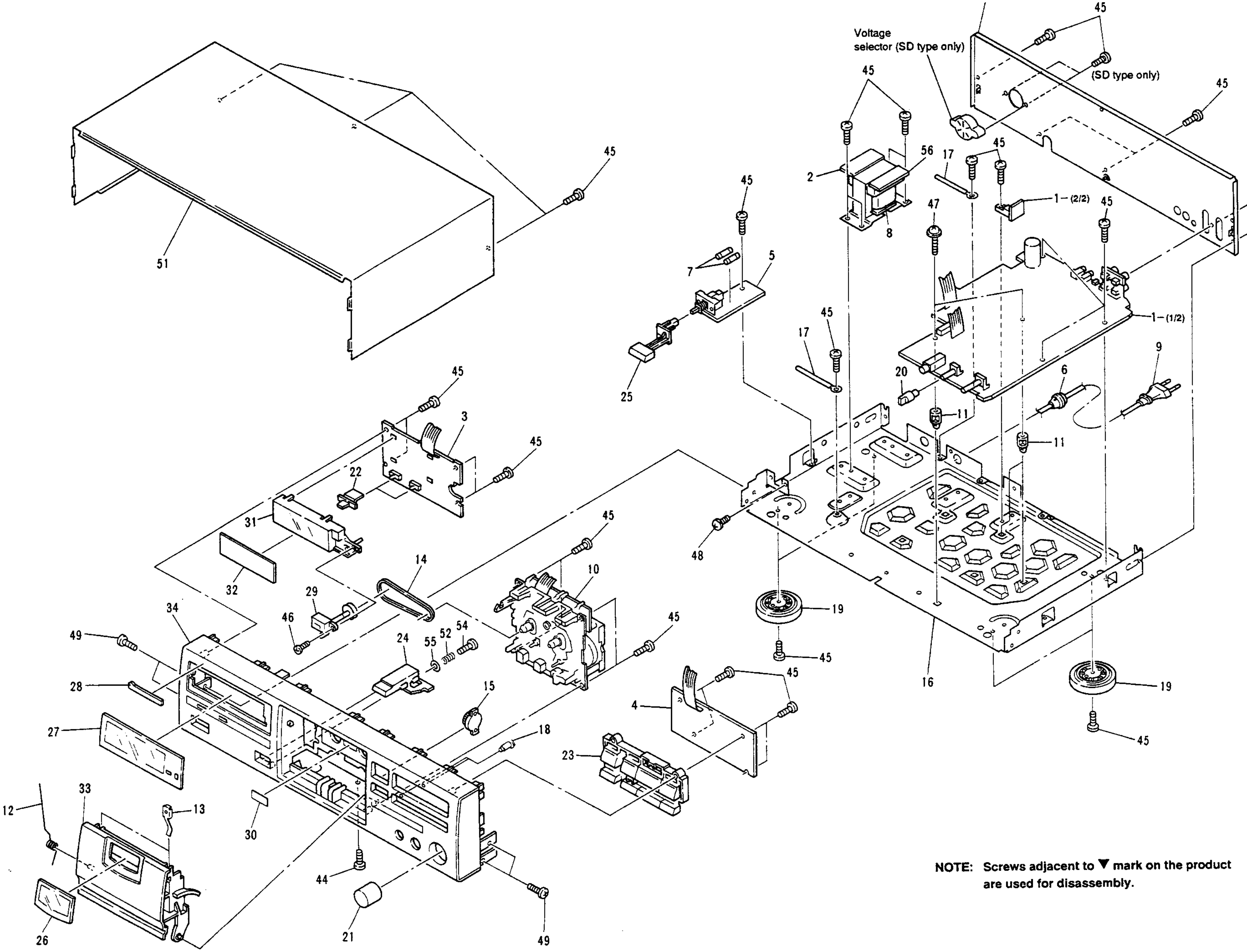
Parts List

Mark	No.	Description	Part No.
	1	MAIN unit	RWZ2792
NSP	2	TRN2 unit	RWZ2794
	3	DISP unit	RWZ2795
	4	OPSW unit	RWZ2796
NSP	5	PWSW unit	RWZ2817
⚠	6	Strain relief	CM – 22B
⚠	7	Fuse FU1001, 1002 (T1.25A)	REK1023
⚠	8	Power transformer	RTT1227
⚠	9	AC power cord	RDG1026
⊙	10	Mechanism unit	RYM1194
NSP	11	PCB spacer	PNY – 404
	12	Door spring L	RBH1254
	13	Half pressure spring	RBK1004
	14	Counter belt	REB1152
	15	Damper assembly	REC1005
NSP	16	Main chassis	RNB1088
	17	Cord clamper	RNH – 184
	18	Indicator lens S	PNW1893
	19	Insulator	PNW1912
	20	Balance knob	RAC1705
	21	VR knob	RAC1707
	22	Slide knob	RAC1713
	23	Operation knob	RAC1771
	24	Eject knob	RAC1772
	25	Power button	RAC1775
	26	Door lens	RAH2171
	27	Meter lens	RAH2172
	28	PIONEER badge	RAM1007
	29	Tape counter	RAW1126
	30	Remain display paper	REE – 113
NSP	31	LED holder	RNK1893
	32	LED panel	RAH2173
	33	Door pocket	RAH2174
	34	Front panel	RAH2175
NSP	35	Rear panel	RNA1645
	36	Connection cord with mini plug	PDE – 319
	37	Connection cord assembly	RDE1002
	38	Control cord	RDE1030
	39	Operating instructions (English, French, German, Italian, Dutch, Swedish, Spanish, Portuguese)	RRE1067
	40	Pad (L)	RHA1111
	41	Pad (R)	RHA1112
	42	Packing case	RHG1421
	43	Sheet	RHX – 034
	44	Screw	BBZ30P060FZK
	45	Screw	BBZ30P080FMC
	46	Screw	BPZ20P080FZK
	47	Screw	IBZ30P150FCU
	48	Screw	PMA30P060FMC
	49	Screw	ABZ30P080FMC
	50	Connection cord	RDE – 010
	51	Bonnet	REA1077
	52	Eject spring	RBH1340
	53	Spacer A	RHC1044
	54	Screw	IPZ26P080FMC
	55	Washer	WA52D080D025
NSP	56	TRN1 board	RNZ2413

PACKING



Exterior


35
45
Voltage selector (SD type only)
(SD type only)
45
45
2
56
8
17
45
1 – (2/2)
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1 – (1/2)
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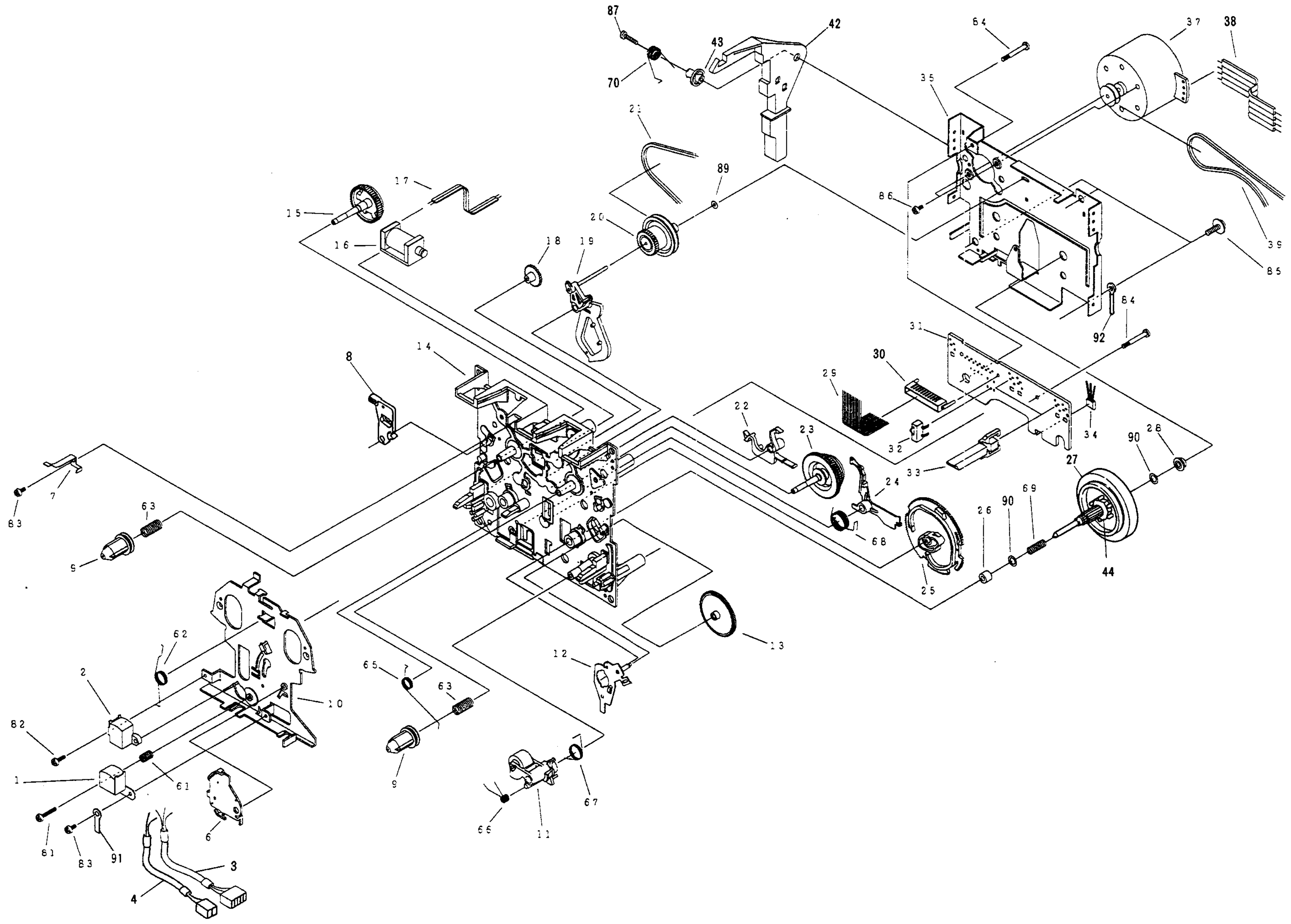
NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.

1.2 MECHANISM UNIT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11
81
83
91
3
4
A
B
C
D

Parts List

Mark	No.	Description	Part No.
	1	R/P HEAD	RPB1026
	2	E HEAD	RPB1027
	3	WIRE HEAD	RKP1404
	4	WIRE HEAD (E)	RKP1405
	6	ASS'Y ARM ASSIST	RXA1401
	7	SPRING CASSETTE	RBK1039
	8	EJECT LOCK	RNK1718
	9	CAP REEL	RNK1719
	10	CHASSIS HEAD	RNE1439
	11	ASS'Y PINCH ARM R	RXA1404
	12	ARM PLAY R	RNK1868
	13	GEAR PLAY	RNK1867
	14	CHASSIS OS.	RXA1417
	15	REEL GEAR	RNK1726
⚠	16	SOLENOID	RXP1020
	17	WIRE	RDC1006
	18	GEAR FF	RNK1723
	19	ASS'Y ARM FR	RXA1412
	20	ASS'Y PULLEY FR	RXA1413
	21	BELT FR	REB1158
	22	ARM BRAKE	RNK1724
	23	ASS'Y SUB REEL R	RXA1408
	24	ARM TRIGGER	RNK1722
	25	GEAR CAM	RNK1725
	26	SHAFT HOLDER	RNG1049
	27	ASS'Y FLYWHEEL R	RXA1415
	28	SHAFT HOLDER	RNG1004
	29	WIRE	RDD1260
NSP	30	HOLDER WIRE	RNK1683
	31	P.C. BOARD	RNP1347
	32	SWITCH MODE	RSN1020
	33	SWITCH (LEAF)	RSN1019
	34	HALL IC.	DN6851A
	35	BRACKET FW	RNE1438
	37	ASS'Y MOTOR	RXM1064
NSP	38	WIRE	RDD1012
	39	BELT MAIN	REB1220
	42	EJECT LEVER L	RNK1831
	43	COLLAR	RNK1704
	44	GEAR FW R	RNK1733
	61	SPRING (AZIMUTH)	RBH1296
	62	SPRING	RBH1284
	63	SPRING	RBH1286
	64	......	
	65	SPRING	RBH1285
	66	SPRING	RBH1298
	67	SPRING	RBH1290
	68	SPRING	RBH1295
	69	SPRING	RBH1325
	70	SPRING	RBH1319

Mark	No.	Description	Part No.
	81	SCREW (AZIMUTH)	RBA1096
	82	SCREW	RBA1029
	83	SCREW	PCZ20P040FMC
	84	SCREW	RBA1093
	85	SCREW	RBA1094
	86	SCREW	RBA1086
	87	SCREW	RBA1095
	89	WASHER	RBF1046
	90	WASHER	WA26D047D013
	91	KEEP WIRE	RNE1456
	92	KEEP WIRE	RNH1004

2. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

$560\,\Omega \rightarrow 56 \times 10^1 \rightarrow 561$ ······························ RD1/8PM$\boxed{5}\boxed{6}\boxed{1}$J
$47k\,\Omega \rightarrow 47 \times 10^3 \rightarrow 473$ ······························ RD1/4PS$\boxed{4}\boxed{7}\boxed{3}$J
$0.5\,\Omega \rightarrow$ 0R5 ······························ RN2H$\boxed{0}\boxed{R}\boxed{5}$K
$1\,\Omega \rightarrow$ 010 ······························ RS1P$\boxed{0}\boxed{1}\boxed{0}$K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

$5.62k\,\Omega \rightarrow 562 \times 10^1 \rightarrow 5621$ ······························ RN1/4PC$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
NSP		MOTHER UNIT	RWM1572
		├─ MAIN UNIT	RWZ2792
NSP		├─ TRN2 UNIT	RWZ2794
		├─ DISP UNIT	RWZ2795
		├─ OPSW UNIT	RWZ2796
NSP		└─ PWSW UNIT	RWZ2817

MAIN UNIT

SEMICONDUCTORS

Mark	No.	Description	Part No.
		IC301, IC501, IC701, IC751	BA15218N
		IC201	CXA1330S
		IC101	NJM4580LD
⚠		IC1201	NJM78M05FA
		IC901	PD4335A
		IC1101	TA7812S
		IC601	UPC1297CA
		Q155, Q275, Q373, Q393, Q601, Q602, Q951, Q981, Q984	2SA1309A
		Q421, Q431, Q821	2SB1238X
		Q131, Q132, Q153, Q154, Q982, Q983	2SC3311A
		Q401, Q402	2SD1302
		Q831	2SD1858X
		Q271, Q272, Q371, Q372, Q391, Q392, Q403	2SD2144S
		Q151, Q152	2SK373
		Q422, Q432	DTC114TS
		Q603	DTC124ES
		Q331, Q332, Q341, Q342	XDC114ES
		Q156, Q157, Q241, Q273, Q274, Q751, Q822, Q5001	XDC124ES
⚠		D1001-D1004, D1201	1SR35-100AVL
		D431, D821.	1SS252
⚠		D1301, D1302	1SS252
		D151-D156, D271, D391, D421-D423, D432, D433, D601, D602, D751, D752, D801-D803, D811, D906, D951, D981, D1101, D1102, D1107, D5001, D5002, D6001-D6003.	1SS254
		D931	MTZJ4.3B
⚠		D1303	MTZJ5.1B

COILS AND FILTERS

Mark	No.	Description	Part No.
		L402	LFA121K
		L401 (F=105K)	RTD1039
		L601, L602 (L=4.6MHz, Q=25, F=105KHz)	RTD1046
		L301, L302 (10mH)	RTF1102
		L321, L322 (5.6mH)	RTF1121
		F201, F202	RTF1209

CAPACITORS

Mark	No.	Description	Part No.
		C609, C610	CCCSL101K500
		C151, C152	CCPUSL100J50
		C103, C104	CEANL100M16
		C173, C174	CEANL220M16
		C201-C204, C207, C208, C303, C304, C701, C702	CEAS010M50
		C109, C110, C205, C206, C221, C231, C305, C306, C408, C615, C617, C705, C706, C1101, C1301	CEAS100M50
		C503, C504	CEAS101M25
		C1201	CEAS102M16
		C551, C821, C1102, C1202, C1302, C1303	CEAS221M16
		C1104	CEAS332M35
		C171, C181, C230, C323, C351, C402, C403, C409, C741, C742, C902, C981	CEAS470M16
		C209, C210, C219, C220, C309, C310, C616	CEAS4R7M50
		C271, C272, C501, C502, C614	CEASR10M50
		C215, C216, C307, C308, C754	CEASR22M50
		C217, C218, C223, C224	CEASR33M50
		C371, C753	CEASR47M50
		C281, C282, C601, C602	CFTXA103J50
		C211-C214	CFTXA222J50
		C404, C605, C606	CFTXA223J50
		C301, C302	CFTXA272J50
		C405, C406	CFTXA332J50
		C407	CFTXA472J50
		C107, C108	CFTXA682J50
		C321, C322	CGCYX153K25
		C341, C342	CGCYX332K25

Mark	No. Description	Part No.
	C607, C608	CGCYX473K25
	C331, C332	CGCYX562K25
	C251, C252	CGCYX822K25
	C182, C273, C901, C903, C1304, C5001, C5002, C6001	CKCYF103Z50
	C255, C505, C1003-C1005	CKCYF473Z50
	C105, C106, C613, C703, C704, C751	CKPUYB101K50
	C311, C312	CKPUYB221K50
	C752	CKPUYB271K50
	C101, C102, C811	CKPUYB681K50
	C603, C604	CKPUYB821K50
	C401	CQPA822J100
	C611, C612 (C=430P, V(DC)=500)	RCG1005

RESISTORS

	R910 (R=100K)	RA4T104J
	R909 (R=1.5K, W=1/10, A=J)	RA7T152J
	R301, R302 (R=56, W=1/6, A=J)	RCN1029
	R413	RD1/2LF010J
	R421, R553	RD1/2LF221J
⚠	R411, R1301	RD1/2LF331J
	VR101, VR102 (R=10K, W=0.1)	RCP1045
	VR301, VR302, VR601, VR602 (R=22K, W=0.1)	RCP1046
	VR701 (5K)	RCS1028
	VR702 (5K)	RCV1095
	OTHER RESISTORS	RD1/6PM□□□J

OTHERS

	CN801 CONNECTOR(13P)	KPE13
	JA5001 MINI JACK	PKN1005
	JA701 PIN JACK(4P)	RKB-020
	JA501 JACK(HEADPHONE)	RKN1002
	JA6001, JA6002 JACK(REMOTE CONTROL)	RKN1004
	X901 CERAMIC RESONATOR(4.19MHz)	VSS1014

TRN2 UNIT

TRN2 unit has no service part.

DISP UNIT

SEMICONDUCTORS

	IC3001	IR2E28
	D3203, D3204, D3301, D3302	1SS254
	D3001-D3008, D3021, D3022, D3201, D3202	SEL6410G
	D3009-D3014, D3104	SEL6C10R

SWITCHES

	S3201, S3301	RSH1041

CAPACITORS

	C3001-C3003	CEAS100M50
	C3004	CEAS470M16

RESISTORS

	ALL RESISTORS	RD1/6PM□□□J

Mark	No. Description	Part No.

OPSW UNIT

SEMICONDUCTORS

	D2002-D2008, D2010	1SS254
	D2102	SEL6410G
	D2100	SEL6C10R

SWITCHES

	S2002-S2008, S2010	RSG1030

RESISTORS

	ALL RESISTORS	RD1/6PM□□□J

PWSW UNIT

SWITCHES

	S1001	RSA-069

CAPACITORS

	C1001, C1002	CKCYF473Z50

Note:

(Type 6)

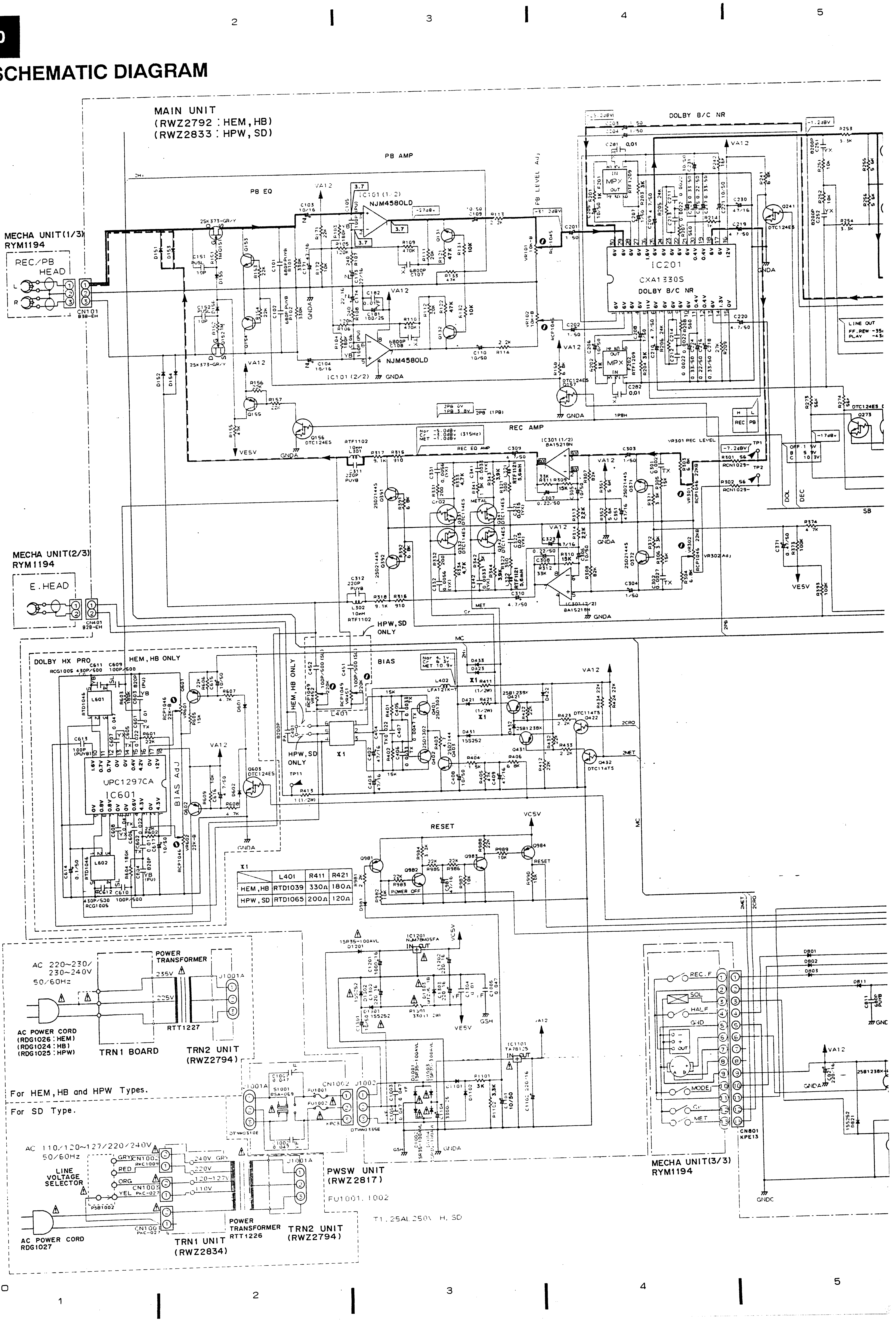
1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ : DC voltage (V) in STOP mode unless otherwise noted.
   ⇦ mA or ← mA : DC current in STOP mode unless otherwise noted.
7. **OTHERS:**
   - ➡ : Signal route.
   - ⊘ : Adjusting point.
   - ▼ (Red) : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SWITCHES** (Underline indicates switch position):

PWSW UNIT
S1001 : POWER ON – OFF

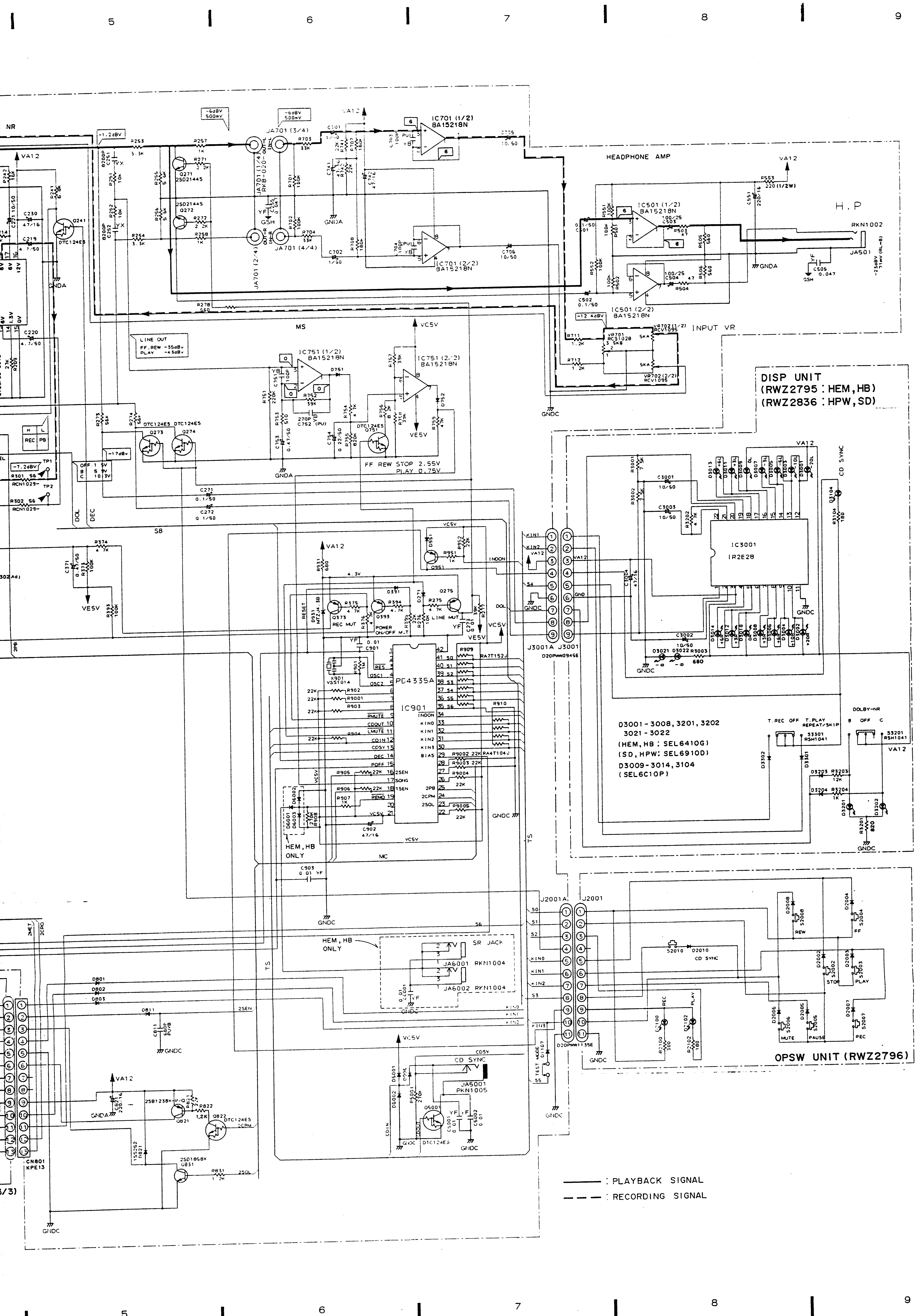
OPSW UNIT
S2002 : STOP
S2003 : PLAY
S2004 : FF
S2005 : PAUSE
S2006 : MUTE
S2007 : REC
S2008 : REW
S2010 : CD SYNC

DISP UNIT
S3201 : DOLBY – NR B – OFF – C
S3301 : T, REC OFF
T, PLAY REPEAT/SKIP

3. SCHEMATIC DIAGRAM


MAIN UNIT
(RWZ2792 : HEM, HB)
(RWZ2833 : HPW, SD)
PB AMP
PB EQ
MECHA UNIT(1/3)
RYM1194
REC/PB HEAD
CN101
IC101 (1/2)
NJM4580LD
IC101 (2/2)
NJM4580LD
PB LEVEL Adj
DOLBY B/C NR
IC201
CXA1330S
DOLBY B/C NR
MPX OUT
MPX IN
LINE OUT
REC AMP
REC EQ AMP
IC301 (1/2)
BA15218N
IC301 (2/2)
BA15218N
VR301 REC LEVEL
VR302 Adj
MECHA UNIT(2/3)
RYM1194
E. HEAD
CN401
HPW, SD ONLY
HEM, HB ONLY
DOLBY HX PRO
UPC1297CA
IC601
BIAS AdJ
BIAS
L401
RESET
POWER OFF
AC 220~230/ 230~240V
50/60Hz
POWER TRANSFORMER
RTT1227
AC POWER CORD
(RDG1026 : HEM)
(RDG1024 : HB)
(RDG1025 : HPW)
TRN1 BOARD
TRN2 UNIT
(RWZ2794)
For HEM, HB and HPW Types.
For SD Type.
AC 110/120~127/220/240V
50/60Hz
LINE VOLTAGE SELECTOR
AC POWER CORD
RDG1027
TRN1 UNIT
(RWZ2834)
POWER TRANSFORMER
RTT1226
TRN2 UNIT
(RWZ2794)
PWSW UNIT
(RWZ2817)
FU1001, 1002
T1.25AL 250V H, SD
IC1201
NJM78M05FA
IC1101
TA78125
VC5V
VE5V
VA12
GNDA
GSH
MECHA UNIT(3/3)
RYM1194
REC.F
SOL
HALF
GND
MODE
Cr
MET
CN801
KPE13
GNDC

X1	L401	R411	R421
HEM, HB	RTD1039	330Ω	180Ω
HPW, SD	RTD1065	200Ω	120Ω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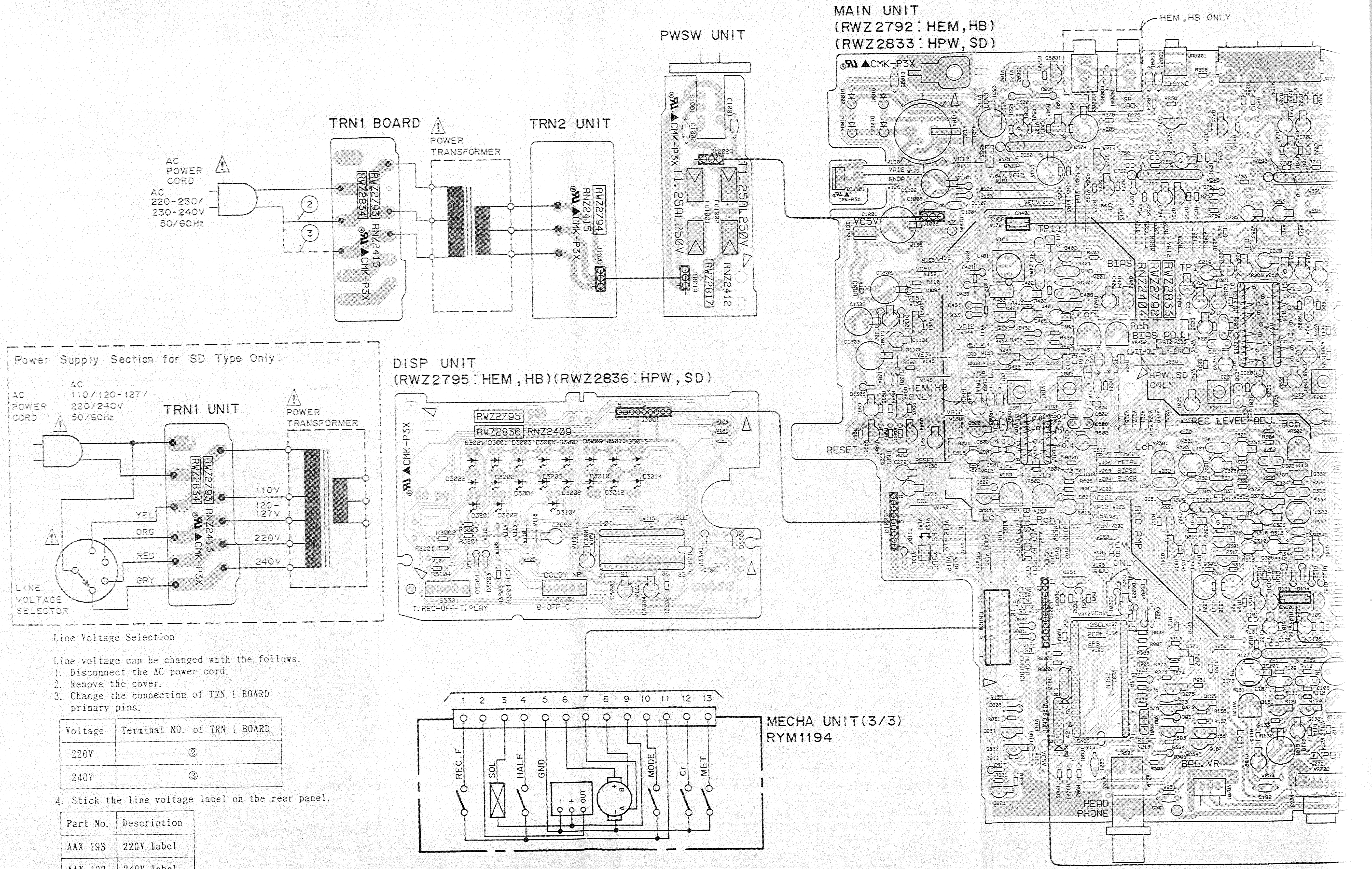
NR
HEADPHONE AMP
H.P
RKN1002
JA501
IC701 (1/2)
BA15218N
IC701 (2/2)
BA15218N
IC501 (1/2)
BA15218N
IC501 (2/2)
BA15218N
JA701 (3/4)
JA701 (4/4)
JA701 (1/4)
RKB-020-
JA701 (2/4)
-6dBV 500mV
-1.2dBV
-12.4dBV
2SD21445
Q271
Q272
Q241
DTC124ES
R553 220 (1/2W)
INPUT VR
VR701 RCS1028
VR702 (1/2) RCV1095
VR702 (2/2) RCV1095
LINE OUT
FF.REW -35dBV
PLAY -43dBV
MS
IC751 (1/2)
BA15218N
IC751 (2/2)
BA15218N
VC5V
VE5V
VA12
GNDA
GNDC
GSH
Q273
Q274
DTC124ES
Q751
FF REW STOP 2.55V
PLAY 0.75V
-17dBV
-7.2dBV
TP1
TP2
RCN1029-
DOL
DEC
SB
DISP UNIT
(RWZ2795 : HEM,HB)
(RWZ2836 : HPW,SD)
IC3001
IR2E28
CD SYNC
J3001A J3001
D20PWW0945E
KIN1
KIN2
INDON
S4
GND
D3001-3008, 3201, 3202
3021-3022
(HEM,HB : SEL6410G)
(SD,HPW: SEL6910D)
D3009-3014, 3104
(SEL6C10P)
T.REC OFF
T.PLAY
REPEAT/SKIP
S3301
RSH1041
DOLBY-NR
B OFF C
S3201
RSH1041
PD4335A
IC901
X901
VSS1014
RESET
Q373
REC MUT
Q393
POWER ON/OFF MUT
Q275
LINE MUT
RA7T152J
RA4T104J
R910
HEM,HB
ONLY
MC
TS
J2001A
J2001
S0
S1
S2
KIN0
S3
S5
TEST MODE
D20PWW1135E
REW
FF
S2010
D2010
CD SYNC
STOP
PLAY
REC
MUTE
PAUSE
OPSW UNIT (RWZ2796)
SR JACK
JA6001 RKN1004
JA6002 RKN1004
CD SYNC
JA5001
PKN1005
Q5001
DTC124ES
CDSY
CDIN
D801
D802
D803
D811
2SEN
CN801
KPE13
2SB1238X-P/Q
Q821
Q822
DTC124ES
2CPM
2SD1858X
Q831
2SQL
/3)
—— : PLAYBACK SIGNAL
– – – : RECORDING SIGNAL

4. PCB CONNECTION DIAGRAM

- View from component side


AC POWER CORD
AC 220-230/ 230-240V 50/60Hz
②
③
TRN1 BOARD
RWZ2793
RWZ2834
RNZ2413
CMK-P3X
POWER TRANSFORMER
TRN2 UNIT
RWZ2794
RNZ2415
CMK-P3X
PWSW UNIT
T1.25AL250V
T1.25AL250V
RWZ2817
RNZ2412
CMK-P3X
MAIN UNIT
(RWZ2792: HEM,HB)
(RWZ2833: HPW, SD)
HEM,HB ONLY
CMK-P3X
VCSV
TP11
MS
BIAS
RNZ2404
RWZ2792
RWZ2833
TP1
Lch
Rch
BIAS ADJ.
HPW, SD ONLY
HEM,HB ONLY
REC LEVEL ADJ.
Rch
Lch
RESET
REC AMP
HEM, HB ONLY
BAL VR
INPUT
HEAD PHONE
Power Supply Section for SD Type Only.
AC POWER CORD
AC 110/120-127/ 220/240V 50/60Hz
TRN1 UNIT
RWZ2793
RWZ2834
RNZ2413
CMK-P3X
POWER TRANSFORMER
110V
120-127V
220V
240V
YEL
ORG
RED
GRY
LINE VOLTAGE SELECTOR
DISP UNIT
(RWZ2795: HEM, HB)(RWZ2836: HPW, SD)
RWZ2795
RWZ2836
RNZ2409
CMK-P3X
DOLBY NR
S3301
T.REC-OFF-T.PLAY
S3201
B-OFF-C
1 2 3 4 5 6 7 8 9 10 11 12 13
REC.F
SOL
HALF
GND
OUT
MODE
Cr
MET
MECHA UNIT(3/3)
RYM1194

Line Voltage Selection

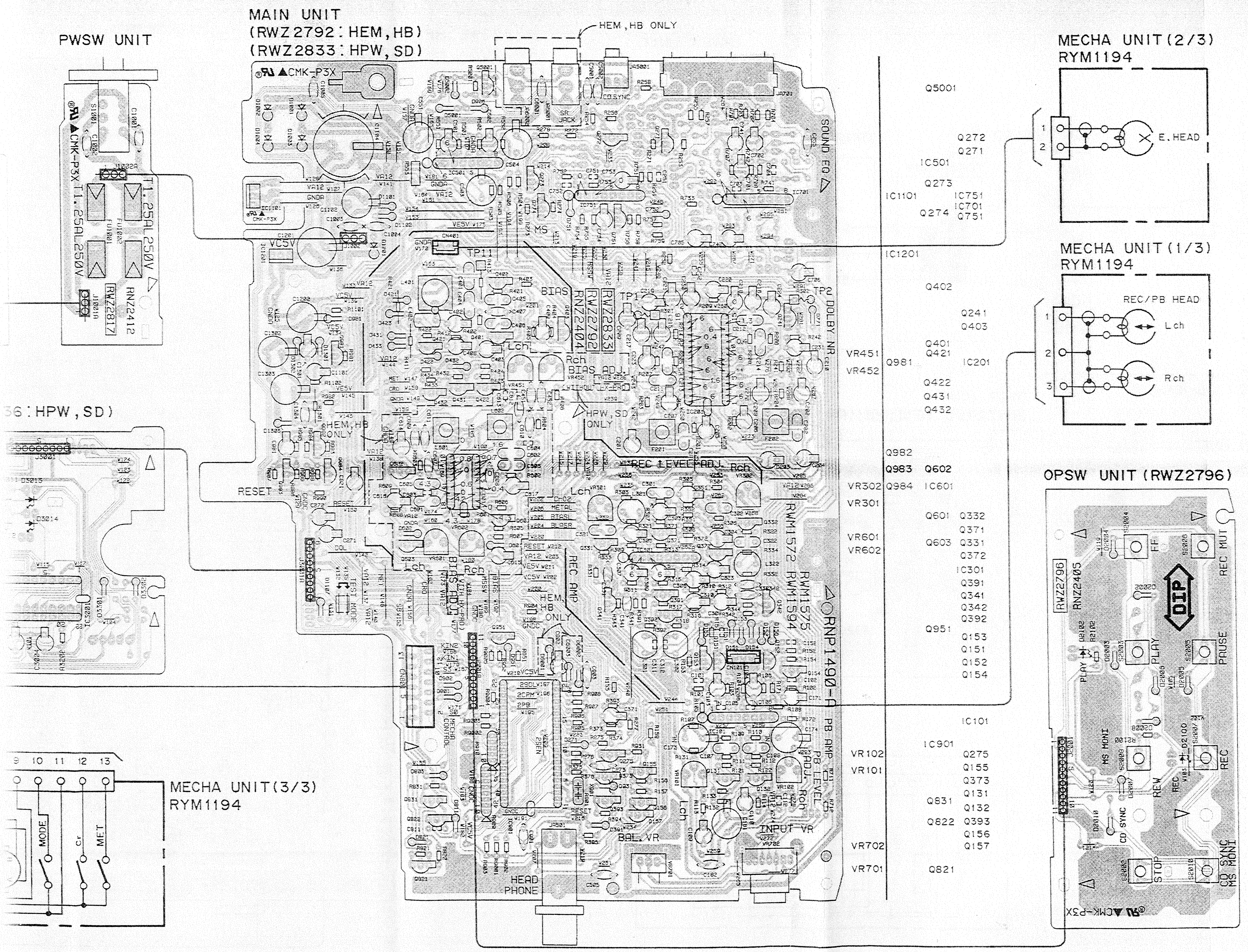
Line voltage can be changed with the follows.

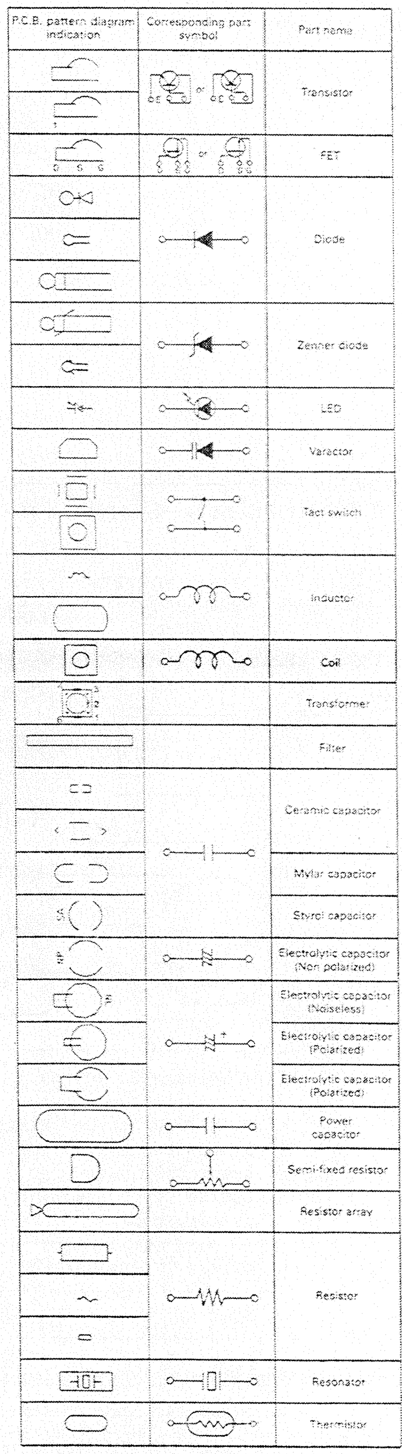
1. Disconnect the AC power cord.
2. Remove the cover.
3. Change the connection of TRN 1 BOARD primary pins.

Voltage	Terminal NO. of TRN 1 BOARD
220V	②
240V	③

4. Stick the line voltage label on the rear panel.

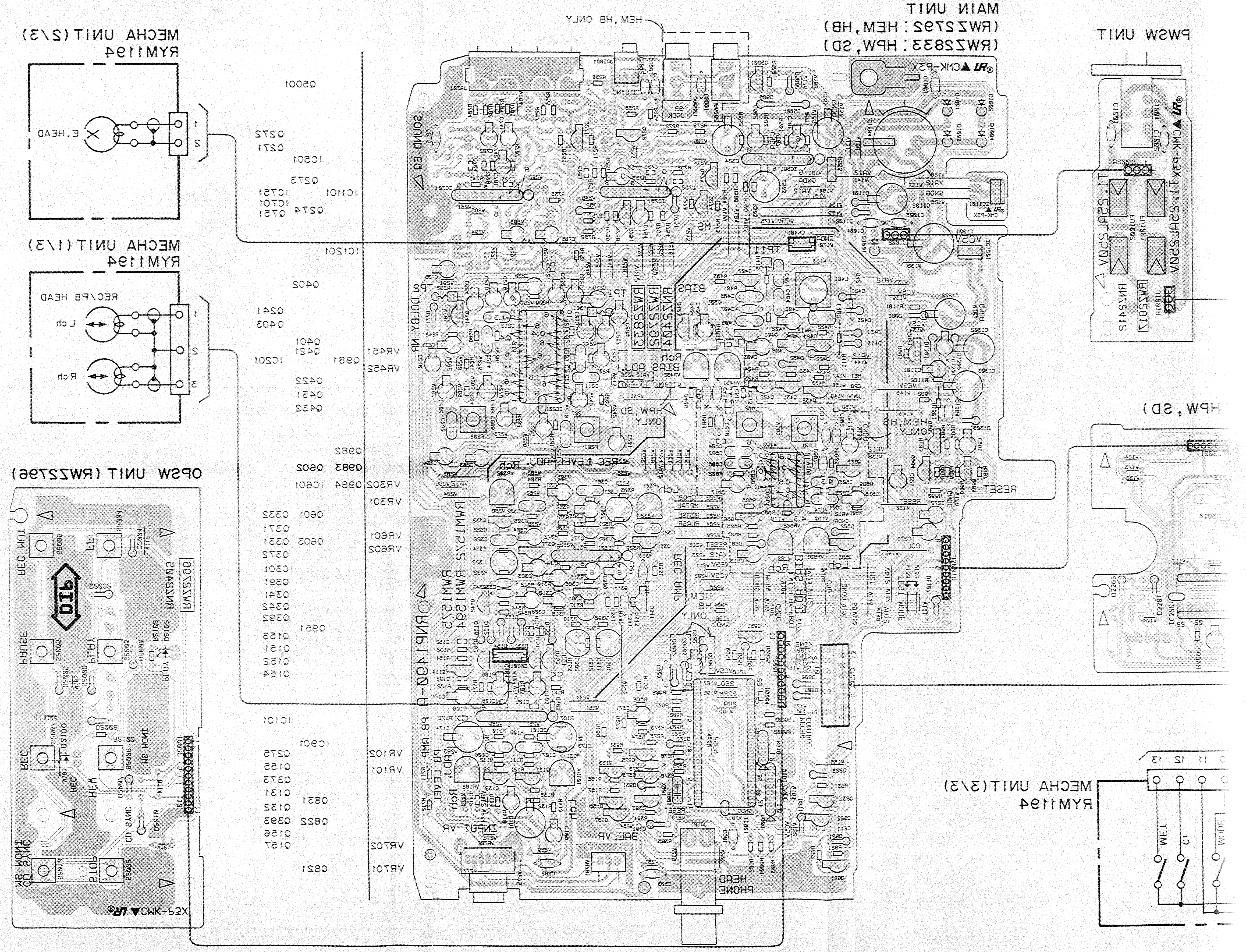
Part No.	Description
AAX-193	220V label
AAX-192	240V label


PWSW UNIT
RWZ2412
RWZ2817
T1.25AL 250V
MAIN UNIT
(RWZ2792 : HEM, HB)
(RWZ2833 : HPW, SD)
HEM, HB ONLY
CMK-P3X
CD SYNC
SR JACK
SOUND EQ
DOLBY NR
BIAS
RWZ2792
RWZ2833
RWZ2404
Lch
Rch
BIAS ADJ.
HPW, SD ONLY
HEM, HB ONLY
REC LEVEL ADJ.
RESET
TEST MODE
REC AMP
RWM1572
RWM1575
RWM1594
RNP1490-A
PB AMP
PB LEVEL ADJ.
INPUT VR
BAL. VR
HEAD PHONE
56 : HPW, SD)
MECHA UNIT (3/3)
RYM1194
9 10 11 12 13
MODE
Cr
MET
Q5001
Q272
Q271
IC501
Q273
IC1101
IC751
IC701
Q274
Q751
IC1201
Q402
Q241
Q403
Q401
Q421
VR451
VR452
Q981
IC201
Q422
Q431
Q432
Q982
Q983
Q602
VR302
Q984
IC601
VR301
Q601
Q332
Q371
VR601
Q603
Q331
VR602
Q372
IC301
Q391
Q341
Q342
Q392
Q951
Q153
Q151
Q152
Q154
IC101
VR102
IC901
Q275
VR101
Q155
Q373
Q131
Q831
Q132
Q822
Q393
Q156
Q157
VR702
VR701
Q821
MECHA UNIT (2/3)
RYM1194
E. HEAD
MECHA UNIT (1/3)
RYM1194
REC/PB HEAD
Lch
Rch
1
2
3
OPSW UNIT (RWZ2796)
RWZ2796
RNZ2405
FF
REC MUT
PLAY
PAUSE
MS MONI
REW
REC
CD SYNC
STOP
CD SYNC MS MONI
DIP



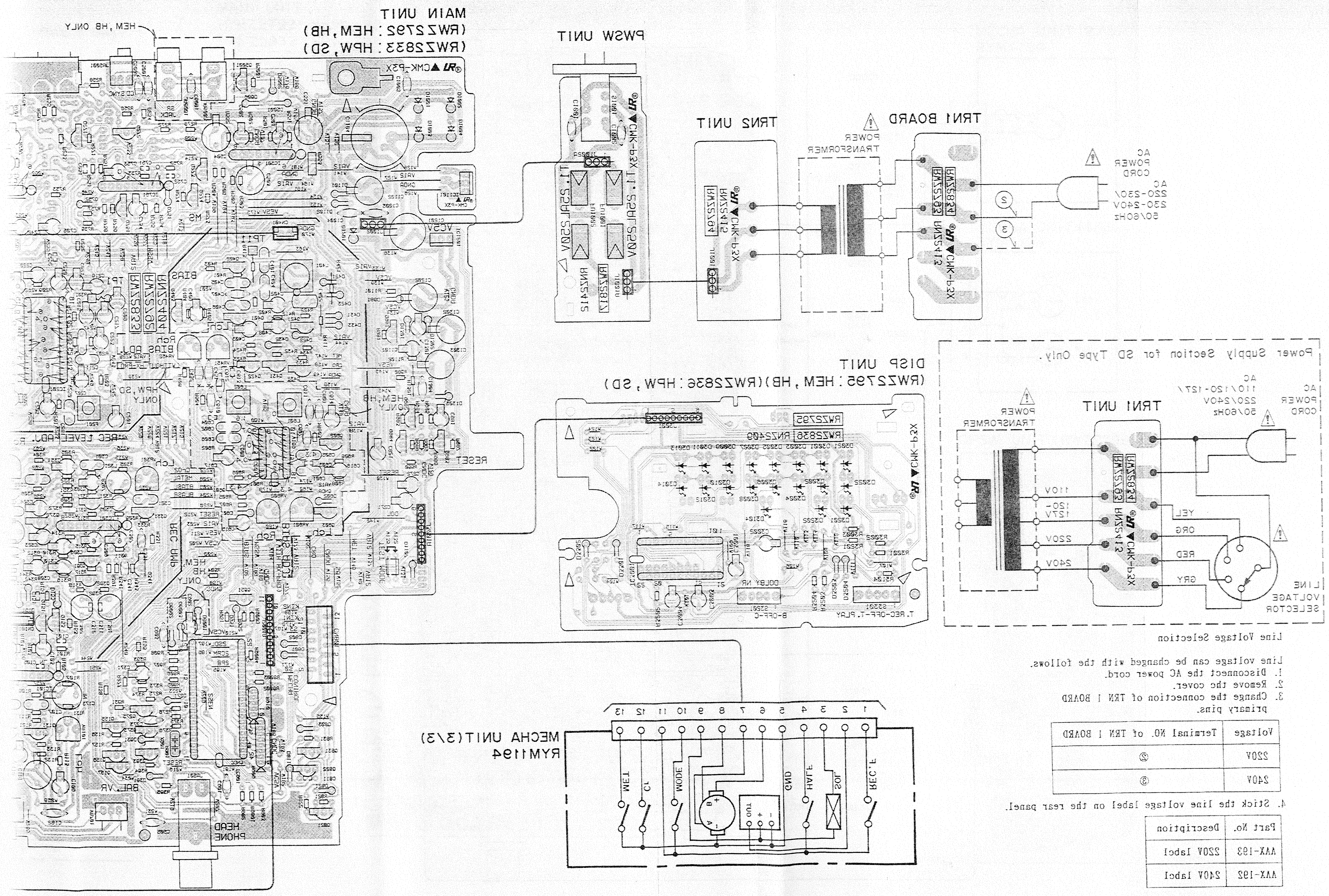
P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ◌ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.


MECHA UNIT(2/3)
RYM1194
E.HEAD
MECHA UNIT(1/3)
RYM1194
REC/PB HEAD
Lch
Rch
OPSW UNIT (RWZ2796)
REC MUT
PAUSE
PLAY
REC
REM
CD SYNC
MS MONI
STOP
DIP
MAIN UNIT
(RWZ2792:HEM,HB)
(RWZ2833:HPW,SD)
HEM,HB ONLY
SOUND EQ
DOLBY NR
BIAS
Lch
Rch
BIAS ADJ.
REC LEVEL ADJ.
REC AMP
PB AMP
INPUT VR
BAL VR
HEADPHONE
RESET
HPW,SD ONLY
HEM,HB ONLY
PWSW UNIT
(HPW,SD)
MECHA UNIT(3/3)
RYM1194
A
B
C
D
9
8
7
6
5
4

4. PCB CONNECTION DIAGRAM

- View from soldering side


MAIN UNIT
(RWZ2792 : HEM, HB)
(RWZ2833 : HPW, SD)
HEM, HB ONLY
CWK-P3X
PWSW UNIT
TRN2 UNIT
TRN1 BOARD
POWER TRANSFORMER
AC POWER CORD
AC
220-230V/
230-240V
50/60Hz
RNZ2412
DISP UNIT
(RWZ2795 : HEM, HB)(RWZ2836 : HPW, SD)
RWZ2795
RWZ2836 RNZ2409
Power Supply Section for SD Type Only.
TRN1 UNIT
AC
110/120-127/
220/240V
50/60Hz
AC POWER CORD
110V
120-127V
220V
240V
YEL
ORG
RED
GRY
LINE VOLTAGE SELECTOR
MECHA UNIT(3/3)
RYM1194
1 2 3 4 5 6 7 8 9 10 11 12 13
REC.F
SOL
HALF
GND
MODE
CL
MET
RESET
HPW, SD ONLY
HEM ONLY
REC LEVEL ADJ.
REC AMP
BIAS
BIAS ADJ
Rch
Lch
BAL VR
HEAD PHONE
DOLBY NR
B-OFF-C
T.REC-OFF-T.PLAY

Line Voltage Selection

Line voltage can be changed with the follows.
1. Disconnect the AC power cord.
2. Remove the cover.
3. Change the connection of TRN 1 BOARD primary pins.

Voltage	Terminal NO. of TRN 1 BOARD
220V	②
240V	③

4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

5. ADJUSTMENTS

5.1 MECHANICAL ADJUSTMENT

1. Tape speed Adjustment

Mode	Test tape	Adjustment position	Specification rating (playback frequency)
PLAY	Play the STD–301 tape (3kHz)	Tape speed adjustment hole	3000Hz ± 5Hz

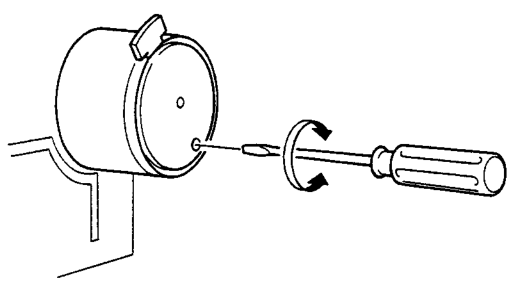


Fig. 5–1 Tape speed adjustment

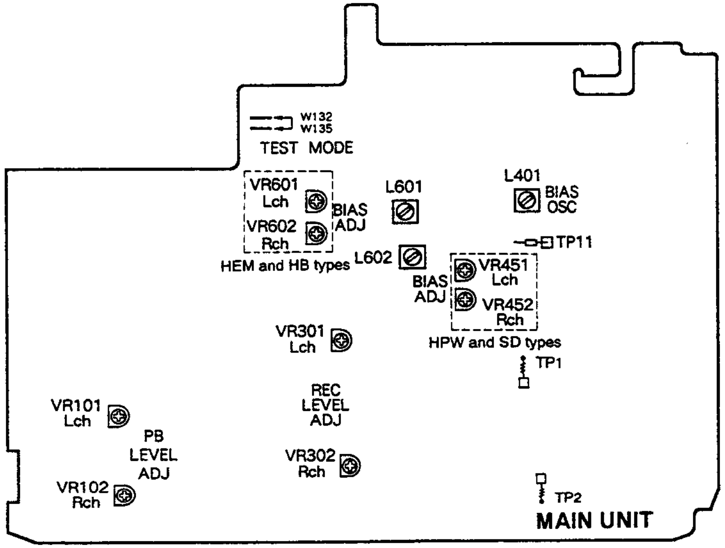

W132
W135
TEST MODE
VR601
Lch
VR602
Rch
BIAS
ADJ
HEM and HB types
L601
L602
L401
BIAS
OSC
TP11
VR451
Lch
VR452
Rch
BIAS
ADJ
HPW and SD types
TP1
VR301
Lch
REC
LEVEL
ADJ
VR302
Rch
VR101
Lch
PB
LEVEL
ADJ
VR102
Rch
TP2
MAIN UNIT

Fig. 5–2 Adjusting points

.2 ELECTRICAL ADJUSTMENTS

djustment Conditions

. The mechanical adjustments must be completed first.

. The head must be cleaned and demagnetized.

. Turn power on allow the deck to warm up for at least a few minutes before commencing any electrical adjustments.

. The reference signal is 0 dBV=1 Vrms.

. Connect a 50 kΩ (or between 47k to 52 kΩ) load resistance to the OUTPUT terminals.

. Unless otherwise specified, the switches listed below are left in the positions indicated.

DOLBY NR : OFF
TAPE SELECTOR : NORM

est Tapes

TD–331E	: Playback adjustments (See Fig. 5–3)
TD–631	: NORMAL blank tape
TD–621	: CrO2 blank tape
TD–610	: METAL blank tape

* As the reference recording level is 250 nwb/m for STD–331E, the recording level will be higher by 4 dB for STD–331B (160 nwb/m). When adjusting, pay carefull attention to the type of tape used.

List of Adjustments

Playback sections

1. Head azimuth adjustment.
2. Playback level adjustment.

Recording sections

1. Bias oscillator adjustment.
2. Recording bias adjustment.
3. Recording level adjustment.
4. Level meter check

NOTE: This unit has an automatic tape selection feature.

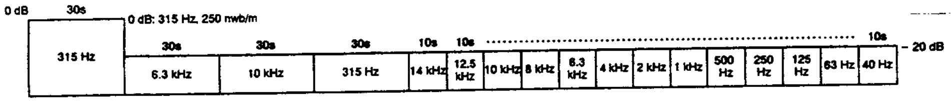


Fig. 5–3 Constants of the test tape STD–331E

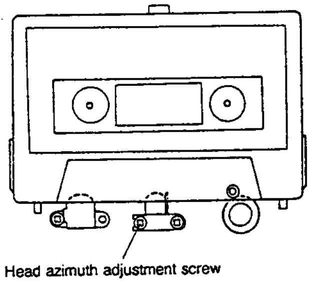


Fig. 5–4 Head azimuth adjustment

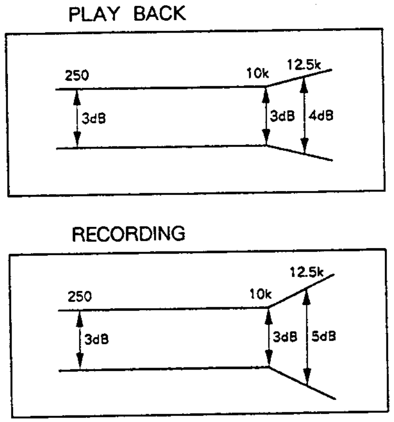


Fig. 5–5 Frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR101, 102 to mechanical center positions.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 10 kHz/–20 dB section of STD–331E test tape.	Head azimuth adjustment screw. (See Fig. 5–4)	LINE OUT	Maximum playback signal level.	
2.	STOP	Lock the screw with screw lock after completing adjustment.				

2. Playback Level Adjustment

- This adjustment determines the DOLBY NR level, and must be performed with great care.

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 315 Hz/0 dB section of the STD–331E test tape.	Deck	VR101 (Lch) VR102 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	–6.7 dBV	This adjustment must be performed accurately for proper Dolby level setting.

RECORDING SECTION

1. Bias Oscillator Adjustment (HEM and HB types only)

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC	Load the STD–610 test tape with no input signal.	Deck	L401	TP. 11	105 kHz ± 0.3 kHz	

2. Recording Bias Adjustment

- After the adjustment, caution should be exercised so as not to become under bias by checking the distortion rate.

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC	Load the STD-631 test tape. Record the 315 Hz and 6.3 kHz signals at –20 dBV input level and playback.	Deck	*1 VR601 (Lch) VR602 (Rch) *2 VR451 (Lch) VR452 (Rch)	LINE OUT	Repeatedly record, playback and adjust so that the playback level of 6.3 kHz signal becomes + 0.5dB ± 0.5 dB when compared with the 315 Hz signal.	

Note : *1 HEM and HB types. *2 HPW and SD types.

3. Recording Level Adjustment

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	REC	Apply a 315 Hz signal to the line input terminals, load the STD–631 test tape.	Volume of the output level of the oscillator		TP. 1 (Lch) TP. 2 (Rch)	–11.2 dBV	
2.	REC	Record the above signal onto the STD–631 test tape, and playback.	Deck	VR301 (Lch) VR302 (Rch)		Repeatedly record, playback and adjust so that the playback signal level becomes –11.2dBV.	
3.	REC	Record the above signal onto the STD–621 test tape, and playback.	Check			–11.2 dBV ± 1.5 dB	
4.	REC	Record the above signal onto the STD–610 test tape, and playback.	Check			–11.2 dBV ± 1.5 dB	

4. Level Meter Check

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC/ PAUSE	Apply a 315 Hz signal to the line input terminals.	Volume of the output level of the oscillator	TP. 1 (Lch) TP. 2 (Rch)	Check that the level meters "0 dB" light up within –7.2 dBV ± 2 dB of the signal output level.	

6. FOR HB, HPW AND SD TYPES

CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

CT-S220/HB, HPW, SD and HEM have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		HEM type	HB type	HPW type	SD type	
	MAIN unit	RWZ2792	RWZ2792	RWZ2833	RWZ2833	
	DISP unit	RWZ2795	RWZ2795	RWZ2836	RWZ2836	
NSP	TRN1 unit (*1)	······	······	······	RWZ2834	for Power transformer
NSP	TRN1 board	RNZ2413	RNZ2413	RNZ2413	······	
⚠	AC power cord	RDG1026	RDG1024	RDG1025	RDG1027	
⚠	Voltage selector (AC110/120 – 127/220/240V)	······	······	······	PSB1002	
⚠	Power transformer (AC220/240V)	RTT1227	RTT1227	RTT1227	······	
⚠	Power transformer (AC110/120 – 127/220/240V)	······	······	······	RTT1226	
	Insulator	PNW1912	PNW1912	······	······	
	Leg assembly	······	······	REC – 369	REC – 369	
	Door pocket	RAH2174	RAH2174	RAH2213	RAH2213	
	Front panel	RAH2175	RAH2175	RAH2214	RAH2214	
NSP	Rear panel	RNA1645	RNA1645	RNA1657	RNA1656	
	Packing case	RHG1421	RHG1426	RHG1426	RHG1427	
	Pad spacer A	······	RHC1039	RHC1039	······	
	Pad spacer B	······	RHC1041	RHC1041	······	
	Connection cord with mini plug	PDE – 319	PDE – 319	······	······	
	Operating instructions (English/French/German/Italian/Dutch/Swedish/Spanish/Portuguese)	RRE1067	······	······	······	
	Operating instructions (English/Spanish)	······	RRE1073	RRE1073	RRE1073	

Note: *1 TRN1 unit has no service part.

MAIN UNIT

RWZ2833 and RWZ2792 have the same construction except for the following:

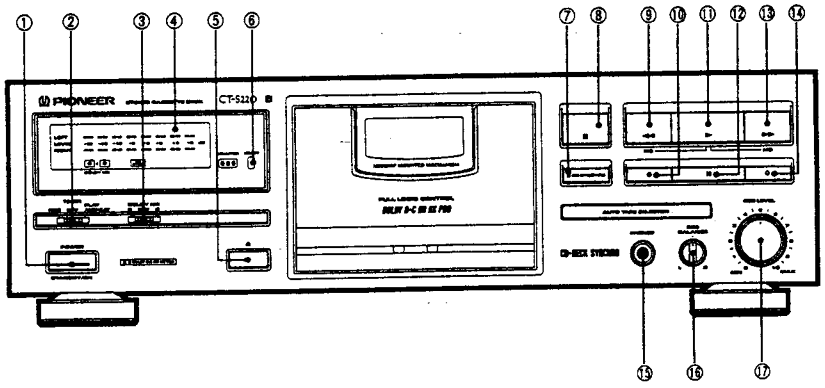
Mark	Symbol & Description	Part No.		Remarks
		RWZ2792	RWZ2833	
	IC601	UPC1297CA	······	
	Q601, Q602	2SA1309A	······	
	Q603	DTC124ES	······	
	D601, D602, D6001 – D6003	1SS254	······	
	L401	RTD1039	RTD1065	
	L601, L602	RTD1046	······	
	C451, C452	······	CCCSL101K500	
	C601, C602	CFTXA103J50	······	
	C603, C604	CKPUYB821K50	······	
	C605, C606	CFTXA223J50	······	
	C607, C608	CGCYX473K25	······	
	C609, C610	CCCSL101K500	······	
	C611, C612 (430p)	RCG1005	······	
	C613	CKPUYB101K50	······	
	C614	CEASR10M50	······	
	C615, C617	CEAS100M50	······	
	C616	CEAS4R7M50	······	
	C6001	CKCYF103Z50	······	
	R411	RD1/2LF331J	RD1/2LF181J	
	R421	RD1/2LF221J	RD1/2LF121J	
	R601, R602, R606	RD1/6PM223J	······	
	R603, R604	RD1/6PM184J	······	
	R605	RD1/6PM153J	······	
	R607, R608	RD1/6PM472J	······	
	R609	RD1/6PM103J	······	
	R1101	RD1/6PM302J	RD1/6PM332J	
	R1102	RD1/6PM332J	RD1/6PM302J	
	VR451, VR452 (220k)	······	RCP1049	
	VR601, VR602 (22k)	RCP1046	······	
	JA6001, JA6002	RKN1004	······	

DISP UNIT

RWZ2836 and RWZ2795 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		RWZ2795	RWZ2836	
	D3001 – D3008, D3021, D3022, D3201, D3202	SEL6410G	SEL6910D	

PANEL FACILITIES



POWER STANDBY/ON switch

THE POWER SWITCH IS SECONDARY CONNECTED AND THEREFORE DOES NOT SEPARATE THE UNIT FROM MAINS POWER IN STANDBY POSITION.

TIMER mode selector

OFF:
Normally, be sure to leave the switch in this position.
REC:
For timer recording.
PLAY/REPEAT:
For timer playback or for repeat playback.

- Recording or playback may suddenly start when turning the power on with this switch in the REC or PLAY/REPEAT position.

DOLBY* NR switch

Set this switch to ON, B-TYPE or C-TYPE (CT-S220 only) for recording with the built-in Dolby Noise Reduction Systems and for playback of tapes which have been recorded using the Dolby Noise Reduction Systems.
For other tapes, set the left DOLBY NR switch to OFF.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ꟿ are trademarks of Dolby Laboratories Licensing Corporation.
For CT-S220 U.K. model
Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
"DOLBY", the double-D symbol ꟿ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

④ Function display

⑤ Eject button (⏏)

Press to open the cassette door after you have pressed the stop button (■) and the tape has stopped.

⑥ Tape COUNTER RESET button

Resets the tape counter reading to "000".

⑦ CD SYNCHRO recording button

⑧ Stop button (■)

To stop all operations.

⑨ Rewind button (◀◀)

To rewind the tape in the direction of the arrows.
When this button is pressed once during playback of a selection, the same selection will be played again. If pressed in the blank between two selections, the first selection before the current tape position will be played. The unit will skip one selection in reverse direction for each time the ◀◀ button is pressed.

⑩ Recording button (●)

When the recording (●) button is pressed, the unit is set to recording standby mode.
Press the pause (❚❚) button or playback (▶) button when ready to record.
The unit will not enter the recording standby mode if a cassette with the erasure prevention tabs removed is loaded.

⑪ Playback button (▶)

To start playback.

⑫ Pause button (❚❚)

To stop tape transport momentarily during recording or playback. Press the button again to resume operation. This can also be done by pressing the playback (▶) button. This button does not work during fast-forward and rewind.

⑬ Fast forward button (▶▶)

To fast-forward the tape in the direction of the arrows.
When pressed during playback, the unit will skip one selection in forward direction for each time the ▶▶ button is pressed.

⑭ Recording mute button (○)

Press this button during recording to create a blank portion of approx. 4 seconds on the tape. The unit will then enter the recording standby mode.

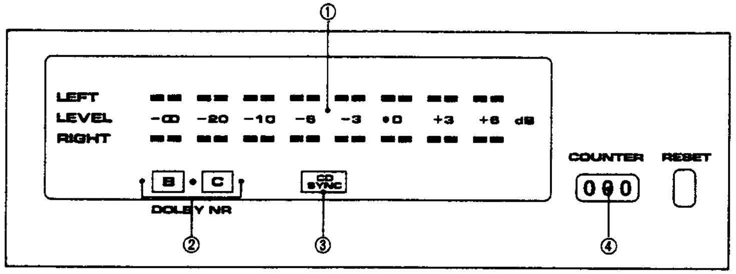
⑮ PHONES jack

⑯ REC BALANCE control

Balancing the recording level between left (L) and right (R) channels.

⑰ REC LEVEL control

FUNCTION DISPLAY



① LEVEL meter

LEFT: Left channel.
RIGHT: Right channel.

NOTE:
The ● mark on the meter scale indicates the reference lever for the DOLBY NR System.

② DOLBY B/C NR indicator

Indicates the selected Dolby Noise Reduction Systems, B-type or C-type.

③ CD SYNC indicator

Lights when synchro recording from a CD player is being carried out.

④ Tape COUNTER

8. SPECIFICATIONS

Systems	4 track, 2-channel stereo
Heads	"Hard permalloy" recording/playback head × 1 "Ferrite" erasing head × 1
Motor	DC servo capstan motor × 1
Wow and Flutter	No more than 0.075% (WRMS) No more than ±0.18% (DIN)
Fast Winding Time	Approximately 110 seconds (C-60 tape)
Frequency Response (±6 dB)	
−20 dB recording:	
TYPE I (Normal) tape	30 to 16,000 Hz
TYPE II (High/CrO₂) tape	30 to 16,000 Hz
TYPE IV (Metal) tape	30 to 16,500 Hz
Signal-to-Noise Ratio (Dolby NR off)	More than 56 dB
Noise Reduction Effect	
Dolby B-type NR ON	More than 10 dB (at 5 kHz)
Dolby C-type NR ON	More than 19 dB (at 5 kHz)
Harmonic Distortion	No more than 1.0% (at −4 dB: 160 nwb/m)
Input (Sensitivity)	
LINE (INPUT)	100 mV (Input impedance 50 kΩ)
Output (Reference level)	
LINE (OUTPUT)	0.5 V (Output impedance 3.4 kΩ)
Headphone	0.6 mW (Load impedance 8 Ω)

Subfunctions

- Dolby B-type and C-type noise reduction systems
- Dolby HX Pro Headroom Extension system
- Auto tape selector
- Headphones jack
- Music search up to ± 15 selections
- CD · DECK SYNCHRO recording
- Automatic space recording mute
- REC BALANCE control
- 7 + 1 seg LED peak meter
- Timer Recording/Playback
- Repeat playback
- System remote control available

Miscellaneous

Power Requirements	a.c. 220—230 Volts~, 50/60 Hz
Power Consumption	16W
Dimensions	420 (W) × 125 (H) × 280 (D) mm
Weight (without package)	3.5 kg

Accessories

Operating instructions	1
Connection cord with pin plugs	2
CD · DECK SYNCHRO control cord	1
SR Remote control cord	1

NOTE:
Specifications and design subject to possible modifications without notice owing to improvements.